

WHAT IS CLAIMED IS:

1. A bicycle pedal assembly comprising:  
a bicycle pedal including  
a pedal shaft having a first end adapted to be coupled to a bicycle crank and  
5 a second end with a center rotation axis extending between said first and second ends,  
a pedal body rotatably coupled to said second end of said pedal shaft about said center rotation axis of said pedal shaft, said pedal body having a first end and a second end,  
10 a front clamping member coupled to said first end of said pedal body, said front clamping member having a front cleat engagement surface facing in a first direction, and  
a rear clamping member coupled to said second end of said pedal body, said rear clamping member having a rear cleat engagement surface facing in  
15 said first direction that is offset from said front cleat engagement surface; and  
a bicycle shoe cleat selectively engageable with said pedal body via said first and second clamping members, said cleat including  
a front attachment portion having a front coupling surface selectively  
20 engageable with said front engagement surface of said front clamping member,  
a rear attachment portion having a rear coupling surface selectively engageable with said rear engagement surface of said rear clamping member, and  
25 a connecting portion connecting said front and rear attachment portions together,  
said front and rear clamping members and said front and rear attachment portions being configured to form a rear float pivot axis on a rear side of said center rotation axis and a front cleat release pivot axis on a front side of said center rotation  
30 axis when said cleat and said pedal are coupled together, said rear float pivot axis being substantially perpendicular to said rear cleat engagement surface.

2. The bicycle pedal assembly according to claim 1, wherein  
said pedal includes front and rear pedal control surfaces and said cleat includes  
front and rear cleat control surfaces cooperating with said front and rear pedal control  
surfaces to control movement of said cleat relative to said pedal.

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3. The bicycle pedal assembly according to claim 2, wherein  
said rear pedal control surface includes a rear pedal pivot surface configured to  
contact at least two points of a rear cleat pivot surface of said rear cleat control  
surface.

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4. The bicycle pedal assembly according to claim 3, wherein  
said rear pedal pivot surface is a transverse surface that is formed by a cutout  
in said rear clamping member.

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5. The bicycle pedal assembly according to claim 4, wherein  
said rear cleat pivot surface is a transverse surface that is formed by a  
projection extending rearwardly from said rear attachment portion.

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6. The bicycle pedal assembly according to claim 5, wherein  
said rear pedal pivot surface is a discontinuous surface having at least two  
opposing flat sections.

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7. The bicycle pedal assembly according to claim 6, wherein  
said rear pedal pivot surface includes an end section connecting said opposing  
flat sections.

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8. The bicycle pedal assembly according to claim 7, wherein  
said rear cleat pivot surface is convex curved surface arranged to contact each  
of said opposing sections and said end section of said rear pedal pivot surface.

9. The bicycle pedal assembly according to claim 6, wherein  
said rear cleat pivot surface is convex curved surface arranged to contact each  
of said opposing sections of said rear pedal pivot surface.

5 10. The bicycle pedal assembly according to claim 9, wherein  
said rear cleat engagement surface includes a pair of engagement sections with  
said rear pedal pivot surface arranged therebetween.

10 11. The bicycle pedal assembly according to claim 3, wherein  
said front pedal control surface includes a concave curved surface with a first  
a radius of curvature and said front cleat control surface includes a convex curved  
surface with a second radius of curvature smaller than said first radius of curvature.

15 12. The bicycle pedal assembly according to claim 11, wherein  
said concave surface of said front pedal control surface and said convex  
surface of said front cleat control surface are transverse surfaces extending from said  
front cleat engagement surface and said front coupling surface, respectively.

20 13. The bicycle pedal assembly according to claim 12, wherein  
at least one of said front pedal control surface and said front cleat control  
surface includes a pair stop surfaces to limit lateral movement of said front attachment  
portion of said cleat relative to said pedal.

25 14. The bicycle pedal assembly according to claim 3, wherein  
said rear pedal pivot surface is a transverse surface with a convex curved  
center section.

30 15. The bicycle pedal assembly according to claim 14, wherein  
said rear cleat pivot surface is a transverse surface with a concave curved  
center section.

16. The bicycle pedal assembly according to claim 3, wherein  
said front and rear cleat engagement surfaces are substantially parallel.
17. The bicycle pedal assembly according to claim 16, wherein  
5 said front cleat engagement surface lies in a plane closer to said center rotation  
axis than said plane of said rear cleat engagement surface.
18. The bicycle pedal assembly according to claim 1, wherein  
said front pedal control surface includes a concave curved surface with a first  
10 a radius of curvature and said front cleat control surface includes a convex curved  
surface with a second radius of curvature smaller than said first radius of curvature.
19. The bicycle pedal assembly according to claim 18, wherein  
said concave surface of said front pedal control surface and said convex  
15 surface of said front cleat control surface are transverse surfaces extending from said  
front cleat engagement surface and said front coupling surface, respectively.
20. The bicycle pedal assembly according to claim 19, wherein  
at least one of said front pedal control surface and said front cleat control  
20 surface includes a pair stop surfaces to limit lateral movement of said front attachment  
portion of said cleat relative to said pedal.
21. The bicycle pedal assembly according to claim 1, wherein  
said front clamping member is non-movably coupled to said pedal body.  
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22. The bicycle pedal assembly according to claim 21, wherein  
said front clamping member is integrally formed with said pedal body as a  
one-piece, unitary member.
23. The bicycle pedal assembly according to claim 1, wherein  
30 said rear clamping member is pivotally coupled to said pedal body.

24. The bicycle pedal assembly according to claim 23, wherein  
said rear clamping member is normally biased toward an engaged position by  
a biasing member arranged between said pedal body and said rear clamping member.

5           25. The bicycle pedal assembly according to claim 24, wherein  
said rear clamping member and said biasing member are mounted on a support  
pin that is coupled to said pedal body.

26. The bicycle pedal assembly according to claim 1, wherein  
10       said pedal and said cleat are configured such that said rear float pivot axis  
remains substantially aligned with a pedaling force center when said cleat floats  
relative to said pedal around said rear float pivot axis to prevent accidental release of  
said cleat from said pedal.

15       27. The bicycle pedal assembly according to claim 26, wherein  
said pedaling force center lies on said center rotation axis.

28. The bicycle pedal assembly according to claim 1, wherein  
said pedal and said cleat are configured such that said cleat floats about three  
20       degrees relative to said pedal in each direction around said rear float pivot axis as  
measured from a center longitudinal axis passing through said rear float pivot axis,  
when said cleat and said pedal are coupled together.

29. A bicycle pedal comprising:  
25       a pedal shaft having a first end adapted to be coupled to a bicycle crank and a  
second end with a center rotation axis extending between said first and second ends;  
a pedal body rotatably coupled to said second end of said pedal shaft about  
said center rotation axis of said pedal shaft, said pedal body having a first end and a  
second end;  
30       a front clamping member coupled to said first end of said pedal body, said  
front clamping member having a front cleat engagement surface facing in a first

direction and a front cleat control surface extending substantially perpendicular to said front cleat engagement surface; and

5 a rear clamping member coupled to said second end of said pedal body, said rear clamping member having a rear cleat engagement surface facing in said first direction and a rear cleat control surface extending substantially perpendicular to said rear cleat engagement surface, said rear cleat engagement surface being offset from said front cleat engagement surface, said front and rear cleat control surfaces and said front and rear cleat engagement surfaces being configured to form a rear float pivot axis on a rear side of said center rotation axis and a front cleat release pivot axis on a  
10 front side of said center rotation axis.

30. The bicycle pedal according to claim 29, wherein  
said rear clamping member pivotally coupled to said pedal body for rotation about an axis substantially parallel to said center rotation axis.  
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31. The bicycle pedal according to claim 30, wherein  
said rear clamping member is a rigid, non-wire member.

32. The bicycle pedal according to claim 30, wherein  
20 said rear clamping member is normally biased toward an engaged position by a biasing member arranged between said pedal body and said rear clamping member.

33. The bicycle pedal according to claim 32, wherein  
said rear clamping member and said biasing member are mounted on a support  
25 pin that is coupled to said pedal body.

34. The bicycle pedal according to claim 29, wherein  
said rear float pivot axis is substantially perpendicular to said rear cleat engagement surface.  
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35. The bicycle pedal according to claim 34, wherein

said front release pivot axis is substantially perpendicular to said front cleat engagement surface.

5        36.    The bicycle pedal according to claim 29, wherein  
said front and rear cleat engagement surfaces are substantially parallel.

37.    The bicycle pedal according to claim 36, wherein  
said front cleat engagement surface lies in a plane closer to said center rotation  
axis than said plane of said rear cleat engagement surface.

10       38.    The bicycle pedal according to claim 29, wherein  
said front clamping member is non-movably coupled to said pedal body.

15       39.    The bicycle pedal according to claim 38, wherein  
said front clamping member is integrally formed with said pedal body as a  
one-piece, unitary member.

20       40.    The bicycle pedal according to claim 29, wherein  
said front and rear cleat control surfaces and said front and rear cleat  
engagement surfaces are configured with about three degrees of cleat float in each  
direction around said rear float pivot axis as measured from a center longitudinal axis  
passing through said rear float pivot axis.